Space Weather Forecast

Issued on Saturday, 03 August 2024 at 01:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Occasional Moderate flares expected, chance of Strong flares and of exceeding S1/Minor Radiation Storm threshold. Potential further Coronal Mass Ejection blow Day 1 (03 Aug), chance of G1-G2/Minor-Moderate Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate, with occasional Moderate class flares observed from across the disc. A highly active disc with thirteen sunspot regions on the Earth-facing disc. A large region has partially rotated around the southwest limb, but continues to be active providing the largest flare activity. A cluster of spots persists in the southwest disc, with two in particular in very close proximity. To the north of these is another fairly complex region, although the flare activity has been generally more muted. A region in the southeast remains highly active. Further regions that have rotated over the eastern limb in the past days are also showing some complexity.

A large CME was observed from the southwest limb in association with a Moderate-class flare at 02/0455UTC. This has been analysed as missing Earth.

A large filament lift-off (arc of plasma) was observed at 02/1840 UTC south-centre disc in imagery. Awaiting coronagraph imagery for any potential CME associated with this event.

No Earth-directed CMEs have been observed in the period.

Solar Wind / Geomagnetic Activity: The solar wind was mostly at slightly elevated levels, with a gradual decline towards background, with speeds ranging between 360-450km/s, under waning weak CME influence. The Interplanetary Magnetic Field (IMF) was generally moderate to weak. The important north-south component was mostly positive, with some brief negative intervals from 02/0000UTC onwards. Geomagnetic activity was Quiet-Unsettled (Kp2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity forecast to continue, with occasional Moderate class flares expected and a chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: A possible glancing blow CME may arrive later on Day 1 (03 Aug), although this is low confidence. Furthermore, due to the number of coincident CMEs, further arrivals cannot be ruled out through the period.

No coronal hole fast wind enhancements are expected during the period, with CME arrivals

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expected to be the main factor of interest. Geomagnetic activity is expected to be generally Quiet to Unsettled, with periods of Active conditions possible and a persistent chance of G1-G2/Minor-Moderate Geomagnetic Storms should any CME arrivals bring more than a glancing blow. In the absence of further CME influence, activity is likely to become mostly Quiet later in the period.

Energetic Particles / Solar Radiation: Solar radiation is currently at background levels, but with a chance of exceeding the S1/Minor Solar Radiation Storm level in response to larger flares from the western disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	5	5
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	80	70	70
Very Active	R3 to R5 X	No	30	25	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	30	25	20	20
Very Active	≥ S3 *	No	5	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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